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FROM CERTAINTeed CORP

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T-395 P.07/14 F-465

#13
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IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF: :
DAVID J. STUCKY ET AL : EXAMINER: KUHN, A.
SERIAL NO. 09/709,527 :
FILED: NOVEMBER 13, 2000 : GROUP ART UNIT: 1732
FOR: FOAMED POLYMER-FIBER
COMPOSITE

DECLARATION UNDER 37 C.F.R. §1.132

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

SIR:

Now comes David Stucky who deposes and states;

1. I am a graduate of MICHIGAN STATE UNIVERSITY and received my
BS MATERIAL SCIENCE degree in the year 1992.
2. I have been employed by CertainTeed Corporation for ¹⁰X years as a researcher in
the area of materials engineering, primarily in materials development, formulation and
testing.
3. That I am a named inventor of the above-identified patent application.
4. That I have read and understand
 - (a) the specification of the above-identified application, Serial No.: 09/709,527,
 - (b) the first Office Action, dated November 7, 2001,
 - (c) a copy of the response to the first Office Action, filed May 7, 2002,
 - (d) the second Office Action, dated July 23, 2002.

5. The following experiments were performed by me or under my direct supervision.

5.1 Background

For certain building applications utilizing synthetic materials as replacements for wood, such as decks and flooring, it is desirable that any screws inserted into the synthetic material be embedded so that the surface of the head of the screw is flush with the surface of the material.

Because the action of inserting a screw into a material necessarily displaces some material to make way for the screw, obtaining a configuration in which the screw head is flush with the surface of a synthetic material without pre-drilling the screw hole may be difficult. Furthermore, screw failure, such as bending or breaking, can result. Screws can also fail by stripping out of the material.

Before the present invention, conventional ways to prevent screw failure in synthetic woods include countersinking the screw, providing a recess into which the screw head can fit. In addition or in place of countersinking, the synthetic wood could be pre-drilled before the screw is inserted. The additional steps of countersinking and/or pre-drilling often increase the time and, therefore, the cost, of building.

The composite building materials of this invention provide a way to address the problem of reducing screw failure by countersinking of screws without pre-drilling. The inventors were motivated to develop materials that perform in a way similar to wood, and in particular to reduce the need for pre-drilling when countersinking a screw fastener.

5.2 Experiments

The following Experiments were performed to evaluate the effect of material composition of composite building materials on the ability to drive in a wood screw without pre-drilling or countersinking. Exhibit A, attached hereto, is a table of data showing the rate

of screw failure obtained by screwing stock square head 3-inch deck screws into boards made using time composite building materials of the invention. The numbers in Column 1 of the table, labeled "Run #", correspond to the numbers in Column 1 of Table 1 of the present patent application, labeled "Formulation". For example, Run 1 of Exhibit A corresponds to Formulation I of Table 1 of the patent application.

Exhibit C attached hereto is a graphic representation of the relationship between screw failure and blowing agent loading. A decrease in screw failure occurred with increased blowing agent loading.

Exhibit D attached hereto is a graphic representation of the relationship between screw failure and acrylic modifier loading. A general trend of decrease in screw failure occurred with increased acrylic modifier loading.

5.3 Results

The data in Exhibit A show that screw failure was reduced when the composite material had a specific gravity of 1.07 g/cc, and continued to decrease as the specific gravity decreased. The relationship between specific gravity and screw failure is depicted in Exhibit B attached hereto.

5.4 Conclusion

The references cited in the Office Action do not suggest the relationship between reduction in screw failure and blowing agent loading or between reduction in screw failure and specific gravity that were observed in the formulations that were tested in connection with this patent application.

6. The undersigned petitioner declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false

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statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

7. Further deponent saith not.

Signature

Date

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Exhibit A

Run #	SPECIFIC GRAVITY (g/cc)	SCREW FAILURE (%)	WOOD FLOUR LOADING (ph)	ACRYLIC MODIFIER LOADING (ph)	BLOWING AGENT LOADING (ph)
5	1.17	100	100	4	0.5
1	1.16	100	68	4	0.5
8	1.11	100	84	7	0.5
4	1.09	100	68	10	0.5
16	1.08	100	84	10	0.5
2	1.07	72	100	10	1.5
3	1.09	60	100	4	1
9	1.02	52	84	4	1.5
7	1.06	44	68	4	1
12	0.99	40	100	10	1
15	0.93	40	68	10	1
10	0.98	36	68	7	1.5
11	0.94	24	100	10	1.5
14	0.97	20	100	7	1.5
13	0.89	8	84	10	1.5
4	0.83	0	68	10	1.5

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% Screw Failure

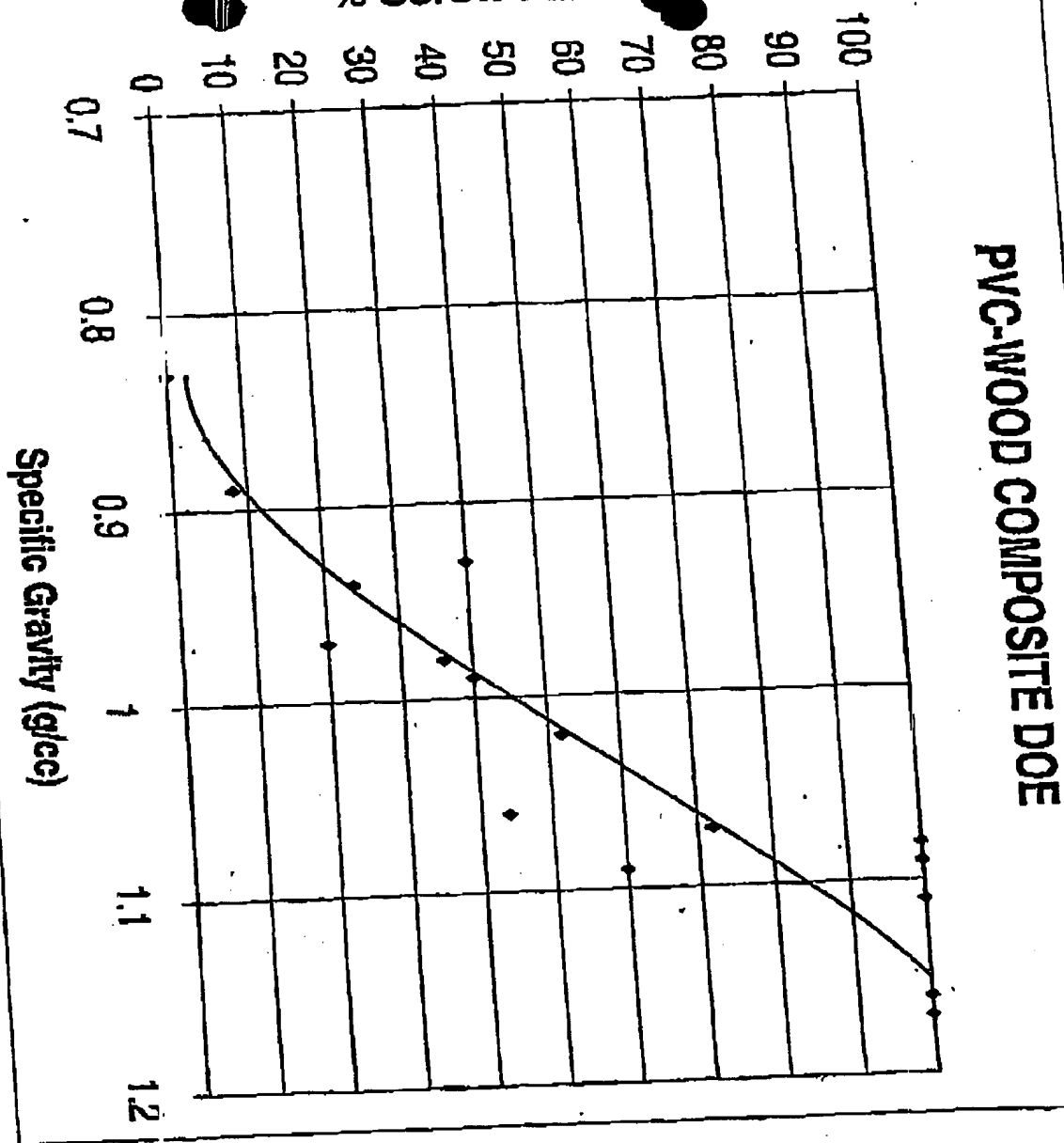


Exhibit 15

Exhibit C

PVC-WOOD COMPOSITE DOE

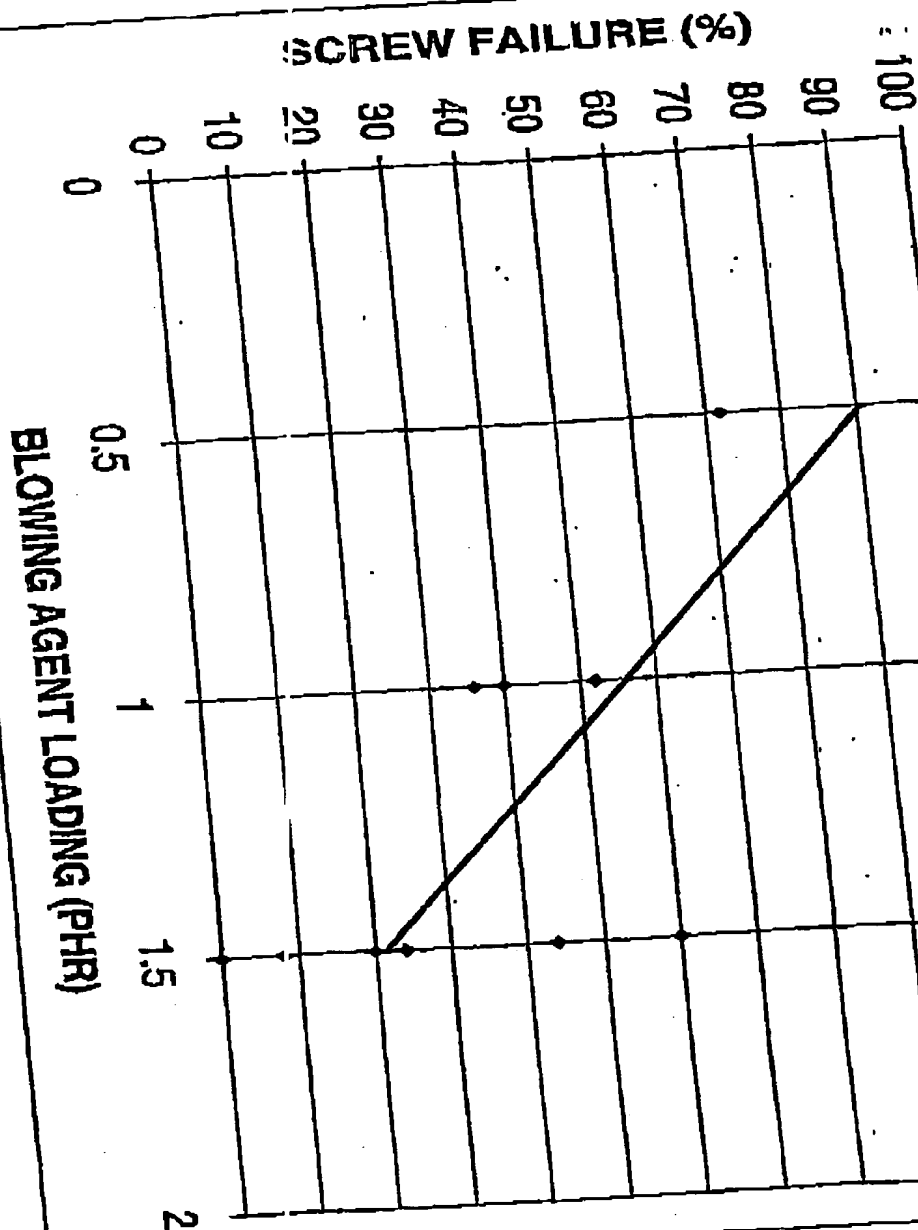


Exhibit D

PVC-WOOD COMPOSITE DOE

